

Information and Communication Technology policy imperatives for rural women empowerment: focus on South Africa

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Abstract—It has been established that Information and Communication Technologies (ICTs) are key drivers for rural development. However, while many countries such as India and South Africa have made significant investments in rural ICT infrastructure and its developmental spin-offs, rural women are still neglected when it comes to access to ICTs. This neglect is evident in the ICT policy initiatives in South Africa as an example, where the relevant policies lack any significant or direct attention to rural women's development. If ICT policies do not address the gendered digital divide in rural areas gender inequality will be encouraged. This paper gives insights on how information exchange by means of ICTs such as Internet, mobile phones and radio could foster economic growth and empowerment of rural women in South Africa. In addition, the paper discusses the role of relevant stakeholders in ICT policy formulation for more effective and appropriate communication, and innovative ways of using ICTs for women empowerment in rural areas. The authors make recommendations for ICT policy development that would better serve the needs of rural women leading to their empowerment.

Keywords- rural women; ICT in rural areas; ICT policy; rural women empowerment;

I. INTRODUCTION

According to Kofi Anan the former United Nations Secretary General, "The so-called digital divide is actually several gaps in one. There is a technological divide – great gaps in infrastructure. There is a content divide. There is a gender divide, with women and girls enjoying less access to information technology than men and boys. This can be true of rich and poor countries alike" [3].

The ability of women to contribute to the family and the economy is constrained by a number of factors such as lack of access to relevant market and price information, lack of appropriate knowledge and skills, and lack of time to access information due to gender roles at home [1]. Heeks [45], Nath [43], Kenny [44], Joseph [42], Andrew [42] and United Nations [46] show how access to Information and Communication Technologies (ICTs) helped alleviate poverty and empower rural women in developing countries. In particular, Harris [46] states that ICTs are capable of inducing

social and economic development in terms of agriculture, trade, health, education, provides employment opportunities and can enrich local culture.

The studies listed above imply that ICT policies in developing countries must reflect and integrate gender issues in order to improve women's quality of life. In addition to this it is crucial to address the issue of diffusion of ICT in rural areas to improve the socio-economic status of rural women. ICTs such as computers, radio, video telephones, television, Internet and mobile phones acts as a medium for delivery of information to grassroots level women who tend to have less educational opportunities when compared with their male counterparts.

The authors advocate the intrinsic value of gendered ICT policy for rural women's development. This paper looks at the impact of ICT connectivity in sectors such as health, agriculture, government services, learning and electronic waste management on rural women in South Africa. It is envisaged that this paper would initiate further discussions on how policy makers should formulate ICT policies with explicit reference to gender equality in rural areas. It is imperative that as an initial vital step rural South African women and NGOs are included in the formulation of such policy.

A literature review on governmental and non-governmental organizations regarding rural development, ICT and women empowerment provided the initial lead for this investigation. Data was collected from a number of organizations and individuals through telephonic interviews and e-mails. The narrative nature of the study is based on document analysis and interviews conducted during the period 2007-2009. A qualitative approach was thought appropriate in order to find out how ICT projects in South Africa can change the lives of rural women. An analysis of ICT provision in South Africa and recommendations towards ICT policy development for rural women empowerment is the result of this qualitative study.

II. THE SOUTH AFRICAN ICT SECTOR

The South African ICT policy does not deliberately cater for the interrelated issues such as gender inequality in accessing Internet (especially among rural women) and human

rights issues prevalent in rural areas. However, the Government Communication and Information System GCIS [24] and Universal Service Agency (USA) [25] could play some role in addressing gender inequality in accessing ICT.

TABLE I.

Comparison of Internet and mobile penetration in South Africa [5]; [39]; [11]	
2008 Life expectancy at birth	42 years
2007 Population	44 Million
2007 World GDP rank	21
2007 Internet users per 100 inhabitants	10.8
2007 Mobile subscription per 100 inhabitants	87.08
2007 Main telephone lines per 100 inhabitants	9.6

Table I shows the population, GDP rank, number of main telephone lines, Internet and mobile penetration in South Africa. Of particular interest is the 2007 mobile subscription per 100 inhabitants of 87.08 but the Internet users per 100 inhabitants for the same period were 10.8, despite the advent of mobile broadband services. In the year 2000, 51% of the total Internet users were women [4]. There are no latest statistics available on how many of these women Internet users are rural women but one can assume that the women users are predominantly in the urban areas.

A research study conducted by a South African NGO has indicated that 90% of the rural women in South Africa can use mobile phones [6]. However, traditional media such as radio and TV are still popular in giving a voice to rural women's opinion about their shortcomings and unrest in their settlements.

According to Internet World Stats there were 5.1 million Internet users in South Africa during the year 2008 [2]. The study could not reveal how many rural women in South Africa have access to Internet. Although ICT policy takes into account aspects such as 'wider communication for the urban areas', it does not check the impact of ICT initiatives on income generation for rural women.

In 1996 the post-apartheid South African government set up the Telecommunications Act to reform the broadcasting sector and encourage competition and liberalization and "for media coverage in the period preceding and after the elections (Independent Broadcasting Act, 1993)". When the Independent Communications Authority of South Africa (ICASA) [19] took over the South African Telecommunications Regulatory Authority and Independent Broadcasting Authority in year 2000 it paved the way for effective regulation of the telecommunications and broadcasting sectors using revised telecommunication policy [7].

In March 2005, the Minister of Communications tabled a Convergence Bill [35] in Parliament to promote convergence and establish the legal framework for convergence in the broadcasting, broadcasting signal distribution and communications sectors that repealed the Telecommunications Act [37]. This bill was later renamed the Electronic Communications Bill.

The Convergence Bill, 2005 [35] promotes universal access and provision to rural areas as part of the reconstruction and development projects and programs contemplated in section 3(a) of Reconstruction and Development Program Fund Act, 1994 (Act No. 7 of 1994). It also provides for convergence of different sectors, control over radio frequency and provision of new licenses. Individual licenses are required in respect of services that have a significant impact on socio-economic development [36].

Independent Communications Authority of South Africa Act amendments and the Electronic Communication Act (ECA), 36 of 2005 [18]; [19]; [20]; [35], which took effect in 19th July 2006 redefines the powers of ICASA and its control over communication markets. The Electronic Communications Bill promotes convergence and interconnection, universal provision of networks, services and connectivity for all, promotes competition and efficiency, empowerment of historically disadvantaged persons including women and youth. The Act also promotes the development of public, commercial and community broadcasting in different languages and for different culture. It also allows merged license types and infrastructure service license.

These initiatives, however, do not have a clear mission to ensure reliable and affordable access to Internet by rural women; improvement of ICT infrastructure in rural areas that serve the needs of rural women and; significant participation by rural women in ICT policy formulation. In 2006 the Centre for Economic Policy Research in the United Kingdom gave its backing to a report by Vodafone titled "Africa: The Impact of Mobile Phones", which clarifies a corresponding higher rate of economic growth among those African countries with higher mobile usage [17]. While it is vital for South African policy makers to promote "convergence" in rural areas to improve economic development the imperatives mentioned above at the start of this paragraph must be considered.

Fifty per cent of the total South African population is rural [55]. Regarding Internet access South Africa is listed as the fourth 'fastest' country in Africa with a download speed of 726 Kbps, lagging behind Reunion, Morocco and Burkina Faso [13]. WiMAX and 3G evolution paths from the GSM and CDMA groups show some promise in bridging the digital divide in areas of India, Vietnam, and sub-Saharan Africa [14].

The declaration principle of World Summit on Information Society held in Geneva in 2003 (section 2) sets forth "the challenge to harness the potential of ICT to promote the development goals of the Millennium Declaration" as a common vision to Information Society. It further plans to achieve its goal of "access to technology to more than half of the world's inhabitants by 2015". However, it must be emphasized that in order to achieve the desired developmental

impact it is crucial for rural (South African) women to participate in ICT policy formulation and to monitor the implementation of the policy.

III. OVERVIEW OF ICT PROVISION IN RURAL AREAS

A study and analysis of various government and NGOs' projects indicate that there are five main categories of ICT initiatives in South Africa. Table II (Annexure A) shows ICT projects for rural development in South Africa, the opportunities ICT can provide, the type of initiative and the role players. The table also shows most of the ICT projects targeting rural women empowerment were initiated by non-governmental organizations or individuals.

The universal access projects such as USAASA [25] and Multi-Purpose Community Centers [24] were created as a part of the South African government's political commitment for universal access of ICTs including the Internet. Its goal is to raise public awareness of telecommunications, encourage universal access, improve communication between government and citizens, delivery of social services to community, evaluate universal service and promote new ways for universal service. It made use of computers, Internet and e-mail for skills development and to provide universal access and government services. **Human rights and social justice initiatives** such as Rural Women's Movement [6] and Pambazuka News [26] made use of mobile phones and electronic newsletter respectively to take care of women's legal issues and provide analysis of human rights issues.

The **e-learning initiatives** such as Women'sNet [38], MobiDic [41] and M4Girls [16] discussed in Table II have enhanced learning skills and capacity building using ICT among rural women. Apart from the Makuleke project [48] there were not many **agro-economy projects** targeting the agricultural sector in rural areas of South Africa. Makuleke project [48] uses Internet and mobile phones as a virtual trading facility or to sell their products from small farms.

Due to the socio-economic and climatic factors poor people in South Africa are more prone to TB [21]. South Africa has one of the highest HIV infected patients in the world [49]. South African governmental organizations should pay more attention to **healthcare projects** such as SMS4AIDS [49], Compliance service [21] and roll out similar projects that benefit rural women. The South African government and its universal service obligations played a major role in providing government services and universal access to citizens through universal access projects. There was not much attention given by the government to healthcare projects using ICT. The healthcare projects such as Compliance Service [21] and SMS4AIDS [49] uses Short Message Service (SMS) to alert tuberculosis and AIDS patients (respectively) to take medication on time. Tygerberg children's hospital and rotary telemedicine project [22] provide healthcare facilities which enable doctors in South Africa to treat patients even in other African countries using Internet and e-mail. Latest research has revealed one may even use cell-phone to test for HIV and malaria [51].

MobiDic [41] enables users to access dictionary content via cellular phones while M4Girls [16] uses mobile phones to

improve the mathematics performance of Grade 10 girl learners. SchoolNetSA [12] promotes use of ICTs in under privileged schools using computer and Internet. Women'sNet [38] is also an e-learning project that focuses on information or content generation, capacity building, digital story telling and support technology planning and website development by rural women or non-governmental organizations.

Cellular phone subscription in rural areas of South Africa has outstripped the land line phone subscription, as mentioned earlier. Cellular phones need less expertise to operate than that required for the Internet if it needs to be used by rural women. So it was a more popular tool for empowerment in rural areas of South Africa than the Internet. Networking technologies such as Internet and mobile phones are taking over telephones, television and radio in rural areas. Convergence of networking and telecommunication technologies has enabled people to access Internet through mobile phone, make international calls through Internet, and to broadcast radio via the Internet. However the rural women in South Africa are far behind in accessing information using ICTs.

Other than the above ICTs community radio was another form of ICT used by rural women for broadcasting information. Often battery-operated radios were used by rural people. "There are an estimated 10-million radio sets in South Africa, with listeners many times that number, broadcasting a range of programming from ultra-hip urban music to local news and information in the deep rural areas" [15]. Community radio is still capable of exchanging information between rural and urban areas. 96% of community radio stations had been granted licenses by the end of 2003 and over 100 were members of the not-for-profit NCRF [23].

The intention of this section was to highlight various initiatives in rural areas that have been enabled by ICTs for the improvement of rural society, especially women. Yet, there is a lack of coordinated and institutionalized policy initiatives addressing rural women issues.

IV. RECOMMENDATIONS AND CHALLENGES FOR ICT POLICY DEVELOPMENT FOR RURAL WOMEN EMPOWERMENT

Cost effective ICT access and infrastructure - Although the South African policy encourages development of the ICT sector the broadband ADSL prices for South Africa are very high compared to other developed countries [47]. If Internet access (even via modem access in community centers) is cheaper the rural women would start accessing the net. In addition, it is important to layout policies for refurbishment and recycling of electronic waste. This would enable to sell computers at a low cost. The analysis of the above mentioned organizations in Table II revealed the location of ICT access and the infrastructure in ICT center should be specific to the rural area and the people accessing it, for more effective adoption.

Inclusion of gender issues and rural development using ICT in policy initiatives - ICT policy in developing countries should address the challenges faced by rural women in accessing ICTs and address other gender issues in the use of ICT. The policies should encourage rural South African

women's use of ICT services which allows them to compete globally and to make their voices heard. The government should engage with Women'sNet and APC [33] who had been vocal in ICT policy making and addressing gender issues for South Africa.

Consideration of social and health issues of rural women using ICT - A government policy body such as USAASA and GCIS can contribute to make data communication affordable and allow rural women to communicate violation of human rights - report violence against rural women, pornography, abuse counseling, health support, right to privacy, and land ownership rights. Major mobile phone operators such as MTN [30], Vodacom [32] and Cell C [31] have engaged in providing community services to rural areas.

Enabling agro-economic growth of rural women using ICT - ICT policy should encourage the use of traditional media like radio (battery operated) TV and video to market rural women's crafts and agricultural products and exchange ideas that caters for economic growth. Apart from this the authors recommend to use digital media like Internet (websites) and mobile phones (SMS) specific for marketing rural women's crafts.

Advocacy for the use of open-source software - It is important to break the monopoly of big software companies and its products and reap the benefits of free and open source software (FOSS) to improve the affordability and security of software. The major stakeholders in policy formulation and the organizations such as SANGONET [34], APC Africa-Women [33] and Women's Net [38] have promoted the use of FOSS rural women.

Non-formal education using ICT - The ICT policy should roll out more community centers equipped with computers in rural areas in each province to provide ICT training and Internet access. Apart from this the authors recommend the use of multi-dimensional ICT resources (a mix of e-mail, websites and mobile phones) to enhance teaching and learning. The training is often done in community centre or Telecenters where women community gathers. Certain economic factors like cost of ICT, cost of refurbishment, rapid changes in technology and the selection of ICT are critical to effective ICT training for rural women.

The major contributors in ICT policy making - such as ICASA, Department of Communications [53], Eskom [54], Transnet [28] and Telkom [29] should engage with NGOs and South African women's organizations to layout an ICT policy to offer services in rural area that caters for job creation and economic growth of rural women. SA policy should also address the use of social networking sites as a medium for future communication.

There are various challenges that rural women and government face when it comes to provision of ICTs to rural women:

- Lack of community center specific for rural women
- Lack of competency in using ICT services

- Lack of skilled women ICT trainer
- Lack of affordability
- Lack of time to access ICT services
- Rapid changes in technology
- Lack of good infrastructure (for example, transmission failure of the network), which in turn will lead to lack of interest
- Lack of the ability to select appropriate ICT
- Lack of sufficient refurbishment centers that may provide low cost ICTs
- Lack of a good ICT policy specific for rural areas
- Lack of technology awareness
- Lack of access to economic opportunities and knowledge creation

V. CONCLUSION

"Women's exclusion from many formal economic activities, especially in rural areas, has contributed to their involvement in casual or unregulated labor as a means of coping with economic hardship" [8];[9];[10]. It is necessary to identify effective ways to implement ICT projects in casual labor to uplift rural South African women. Each province should proactively use ICT for rural women's socio-economic development.

The Convergence Bill clearly states it "may liaise consult and cooperate with any person or authority" [35] with regards to universal access projects, but one must encourage participation of women's organization to fulfill governments' social obligations and empower rural women.

It is vital to engender ICT policies to improve services to rural women in health, commerce, education, government and agricultural sectors. These would further enhance their income generation capabilities and improve social status of rural women. If their voices are heard via ICT services such as website, Internet or radio will further boost their economy. There were important lessons that emerged from the analysis of organizations studied in this paper. Various organizations discussed here have used digital ICTs to bridge digital divide, for e-learning and health issues, for governmental services and accessing health information.

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ANNEXURE A

TABLE II.

Comparison of ICT projects that have empowered rural people in South Africa				
<i>Project / Organization</i>	<i>Opportunities for rural people</i>	<i>Type of initiative</i>	<i>ICT used</i>	<i>Role players</i>
Multi-Purpose Community Centers (MPCC) of Government Communication and Information System GCIS[24]	It provides government services such as application for identity documents, pensions, welfare grants, employment insurance, passports, death and birth certificates, information on issues such as health, labor issues, citizen rights, education and other information to rural women and men.	Universal Access project	Computer, Internet E-mail	Government Communication and Information System (GCIS) [24], USA[25], ICASA and Department of Communication (DoC)
Universal Service and Access Agency of South Africa's (USAASA) [25] ICT centre or USA	It provides universal access to telecommunication facilities, skills development in software packages and information production and exchange to disadvantaged communities.	Universal Access project	Computer, Internet, E-mail	South African Government
Rural Women's Movement (RWM) [6]	RWM takes care of legal issues, community partnership issues and land inheritance issues of rural women. RWM later partnered with Fahamu [27] to implement a pilot project - UmNyango Project. This project helps rural women to report violation of their human rights	Human rights and social justice initiatives	Mobile phone	Ms. S. Ngubane
Pambazuka News [26]	Newsletter provides latest news, commentary and analysis relevant to human rights and social justice organizations in Africa.	Human rights and social justice initiatives	Electronic newsletter	Fahamu [27]
Compliance service [21]	Alerts tuberculosis patients to take their medication using Short Message Service (SMS)	Healthcare project	Mobile phone, SMS	Dr. David Green [21]
Tygerberg children's hospital and rotary telemedicine project [22]	A South African project that provides healthcare facilities by linking its specialists to community and district hospital doctors and even to doctors in nearby African countries, thus enabling patients to be treated remotely.	Health care project	Internet, e-mail	Tygerberg children's hospital
SMS4AIDS [49]	SMS reminders are send to AIDS patients timed to their pill schedule along with supportive messages provided by AIDS counselors	Health care project	Mobile phone, SMS	Cell phone providers, SMS4AIDS
Makuleke project [48]	It gives rural farmers access to national market via Internet. Mobile phones allow a virtual trading facility that allows farmers to sell their product from small farms.	Agro-economy project	Internet, mobile phones	Alcatel, Manobi, Vodacom
SchoolNetSA [12]	It promotes use of ICT in under privileged schools. It has various educator development programmes for teachers and NGOs. Educator's Network and Partners in Learning (sponsored by Microsoft), Intel® Teach are some of the projects offered by SchoolNet SA	E-learning project	Computer, Internet	Center for Education Technology and Distance Education (national Department of Education), SchoolNetSA
MobiDic or Mobile Dictionary [41]	It enables users to access dictionary content via their cellular phones. This project assists users in improving language skills and enhancing reading and writing abilities. You may send a word for which the user needs an explanation to a short code-number. The user receives the definition of the word as SMS.	E-learning project	Mobile phone	SABC Education in partnership with the Gauteng Economic Development Agency (GEDA) and Biza Telecoms
M4Girls[16]	It was launched to improve the mathematics performance of Grade 10 girl learners. They are now developing digital content in English and information technology (IT)	E-learning project	Mobile phone	Nokia, South African Department of Education and Mindset Network
Women'sNet [38]	It focuses on information/content generation, capacity building, provides gender awareness programs, facilitates digital story telling, technology planning for NGOs, communication support and assistance for website development to NGOs	E-learning project	E-newsletter, computer and Internet	South African Non-Governmental Organization Network (SANGONeT) [34] and the Commission on Gender Equality (CGE) [52]